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CHEMICAL WEED CONTROL IN FORAGE SEED CROPS

Project # 87-05-0315
1988 Year End Report
December 15, 1988

92-07434/

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS

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Abstract

The project was designed to evaluate the effect of various weed control chemicals when applied to forage seed crops in fall and spring.

Chemicals that were evaluated include the following: Banvel, Blagal, Buctril M, MCPA, 2,4-D, Torch and Glean. These chemicals were applied to a variety of forage seed crops grown in the area, with fall and spring treatments done at each site. Square metre samples were harvested to determine if there was any effect on seed yield from the various chemical treatments applied.

Objective

The main objective of the project was to evaluate the effectiveness of broadleaf chemicals for use in forage seed crops and to determine if these chemicals had an effect on seed yields when applied in the spring or fall.

Procedure and Results

We selected various types of forage grass seed crops that are normally grown in the area to include in the project. Crops that were represented in the project included: Intermediate Wheat Grass, Crested Wheat Grass, Timothy, Brome Grass (1st and 2nd year stands) and Kentucky Blue Grass.

Chemical, application, plot monitoring, and yield sampling was all completed by Head Consulting, Nipawin. A report of the work they completed, chemical application rates, and observations made, is provided below. It should be noted that Plots 1, 2, 3, 4, 5, and 6 were sprayed in the fall of 1987; Plots 7, 8, 9, 10 and 11 were sprayed in the spring of 1988; and Plots 12, 13, 14, 15 and 16 were sprayed in the fall of 1988. The fields where Plots 12, 13, 14, 15 and 16 are located will all have spring treatment plots established. These sites will be monitored in 1989 and square metre yield samples will be taken in the fall of 1989.

We would like to thank May and Baker Chemicals, Pfizer Chemicals, Sandoz, and Ciba Geigy Chemicals for donations of chemical productions for use in the project.

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS

AGRICULTURE DEVELOPMENT FUND PROJECT # 87-05-0315

Report to the District 31 Agricultural Board

November 28, 1988

Summary of Work:

A total of 16 plots have been established on sites selected by L. Lee, Project Manager. Six plots were sprayed in the fall of 1987, and 5 in the spring of 1988. These 11 plots were harvested in the fall of 1988 and the samples delivered to the Melfort Research Station for threshing.

The remaining 5 plots were established and sprayed in the fall of 1988 and will be harvested in 1989. Provisions were made to establish plots adjacent to these five in the spring of 1989.

The plot design was modified in the spring of 1988 to include an addition chemical treatment. The added treatment is Glean at a rate of 22 gm/hectare. The 8 treatments (Table 1) were randomized into a complete block design with three replications (Figure 1).

Table 1: Chemicals applied in 1988

Chemical	Rate (L/Ha)
Banvel (480 g/L)	0.290
Blagal (375 g/L)	2.250
Buctril M (560 g/L)	1.000
MCPA (500 g/L)	2.200
2,4-D (500 g/L)	2.200
Torch (450 g/L)	0.875
Glean	22 g/Ha

The herbicides were applied with a hand-propelled plot sprayer. The sprayer is equipped with a 2 meter shielded boom with 4 nozzles on 50

cm. spacings. Delavan LF1-80 tips were used. The system was pressurized with compressed carbon dioxide to provide a spray volume of 350 ml/min./nozzle. The sprayer was propelled at a speed of about 1 metre/second to give an application rate equivalent to 110 litres/hectare.

A one square metre sample was collected from each subplot at harvest. The samples were bagged, dried, and delivered to the Melfort Research Station for threshing and weighing.

A description of each plot is provided. Yield results are not yet available.

SUMMARY OF OBSERVATIONS:

It is expected that any effects of herbicides on seed production will be over-shadowed by the early season drought experienced in this area. The Kentucky Blue Grass (Plots 5 and 10), the Crested Wheat Grass (Plots 2 and 8) and the Timothy (Plots 3 and 9) were the most severely affected. The Kentucky Blue Grass plots were abandoned and not harvested.

Visual crop responses to the application of herbicides was observed only in Plot 4. The reduction in weed competition allowed a significant increase in the height and density of the Brome Grass stand.

Weed growth, particularly wild oats, in Plots 1 and 7 was stimulated by mid-season rains. Yield results will have to interpreted with this in mind.

PLOT 1:

Differences in stand densities were observed in this plot. Replicate 1 had a significantly higher population of intermediate wheat grass than Replicates 2 and 3. All herbicide treatments had fewer weeds than the Checks, however, no treatment was visibly superior. Although weeds were observed in each subplot, their populations were insignificant except for the wild oats that germinated in mid-season in Replicates 2 and 3.

PLOT 2:

The Crested Wheat Grass was severely affected by the drought. Differences among herbicide treatments is unlikely. There were virtually no weeds, except the occassional Hawksbeard were observed at harvest in any of the subplots.

PLOT 3:

The effects of the early season drought were very obvious in this plot. Many of the timothy plants did not put up seed stalks. There were very few weeds in any of the subplots at harvest. Hawksbeard occurred in the checks only. Seed yields will be very low and differences among herbicide treatments is unlikely.

PLOT 4:

This plot had severe weed infestations. Dandelion was the major weed species. No herbicide eliminated all the weeds nor reduced the weed populations to acceptable levels. However, a visual crop response was observed for all herbicide treatments.

PLOT 5:

The Kentucky Blue Grass was so severely affected by drought that the plot was abandoned and no effort was made to collect yield samples.

PLOT 6:

There were virtually no weed problems in this plot. The drought conditions along with the competition of the well established second year brome grass appeared to eliminate the weeds even in the untreated check subplots. There were no visual crop differences among the herbicide treatments.

PLOT 7:

Major variability in stand occurred across this plot. Replicates 2 and 3 had relatively thin stands of Intermediate Wheat Grass. Replicate 1 was a more uniform stand. There were more weeds in this plot at harvest than in the spring because of the mid-season rains and the lack of crop competition. All herbicide treatments had fewer weeds than the check treatments, however all treatments gave variable control of weeds. The Glean treatment was most effective.

PLOT 8:

There were no weeds in this plot at harvest except for the occassional Hawksbeard. The stand of Crested Wheat Grass was severely affected by the drought. The effects of the herbicide treatments will likely be masked by the drought.

PLOT 9:

The drought effects were more significant than the herbicide effects in this plot. Much of the Timothy did not head out. Weed growth was also limited even in the check treatments. Horsetail (scouring rush) was present in every subplot. The only other weed observed at harvest was the occassional Canada thistle.

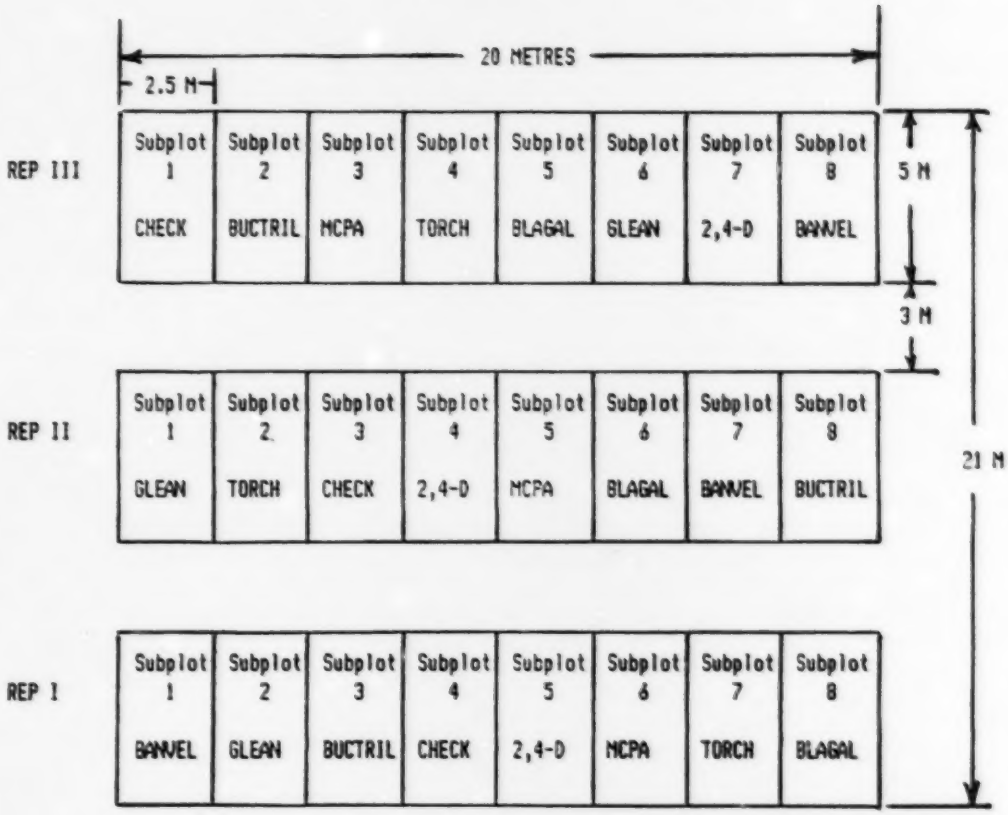
PLOT 10:

The Kentucky Blue Grass was so severely affected by the drought that this plot was abandoned and no yield samples were collected. There was very little growth of either the Blue Grass or of weeds.

PLOT 11:

This second year stand of Brome had very low weed populations in the spring. The crop competition and the drought virtually eliminated any weed growth this summer. No variability in the crop due to the herbicide treatments were visible.

PLOT DESIGN


20 METRES
2.5 M
REP III
Subplot 1 CHECK
Subplot 2 BUCTRIL
Subplot 3 MCPA
Subplot 4 TORCH
Subplot 5 BLAGAL
Subplot 6 GLEAN
Subplot 7 2,4-D
Subplot 8 BANVEL
5 M
3 M
REP II
Subplot 1 GLEAN
Subplot 2 TORCH
Subplot 3 CHECK
Subplot 4 2,4-D
Subplot 5 MCPA
Subplot 6 BLAGAL
Subplot 7 BANVEL
Subplot 8 BUCTRIL
21 M
REP I
Subplot 1 BANVEL
Subplot 2 GLEAN
Subplot 3 BUCTRIL
Subplot 4 CHECK
Subplot 5 2,4-D
Subplot 6 MCPA
Subplot 7 TORCH
Subplot 8 BLAGAL

Head Consulting

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #0-87-05-0315

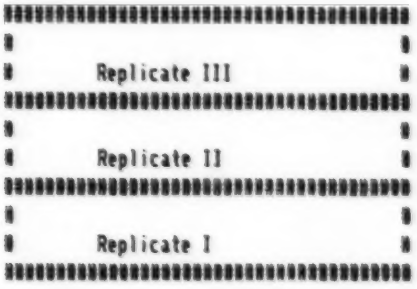
PLOT DATA SHEET

PLOT #: 1 LOCATION: NW 27-50-15 CO-OPERATOR: E. Geall

FORAGE VARIETY: Intermediate Wheat Grass YEAR SEEDED: 1987 DATE SPRAYED: Sept. 26,1987

SITE DIAGRAM:

North



South

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	MCPA	1	_____
	2	BUCTRIL	4	_____
	3	BANVEL	7	_____
	4	TORCH	10	_____
	5	BLAGAL	13	_____
	6	2,4-D	16	_____
	7	CHECK	19	_____
2	1	MCPA	2	_____
	2	TORCH	5	_____
	3	BUCTRIL	8	_____
	4	BANVEL	11	_____
2	5	BLAGAL	14	_____
	6	2,4-D	17	_____
	7	CHECK	20	_____
3	1	MCPA	3	_____
	2	BUCTRIL	6	_____
	3	BANVEL	9	_____
	4	TORCH	12	_____
	5	BLAGAL	15	_____
	6	2,4-D	18	_____
	7	CHECK	21	_____

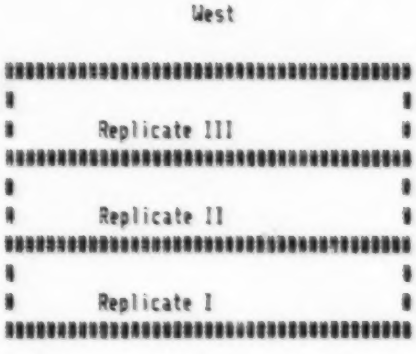
CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #0-87-05-0315

PLOT DATA SHEET

PLOT #: 2 LOCATION: NE 28-51-15 CO-OPERATOR: B. Geall

FORAGE VARIETY: Crested Wheat Grass YEAR SEEDED: 1986 DATE SPRAYED: Oct. 18, 1987

SITE DIAGRAM:



REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	MCPA	22	_____
	2	BUCTRIL	25	_____
	3	BANVEL	28	_____
	4	TORCH	31	_____
	5	BLAGAL	34	_____
	6	2,4-D	37	_____
	7	CHECK	40	_____
2	1	MCPA	23	_____
	2	TORCH	26	_____
	3	BUCTRIL	29	_____
	4	BANVEL	32	_____
2	5	BLAGAL	35	_____
	6	2,4-D	38	_____
	7	CHECK	41	_____
3	1	MCPA	24	_____
	2	BUCTRIL	27	_____
	3	BANVEL	30	_____
	4	TORCH	33	_____
	5	BLAGAL	36	_____
	6	2,4-D	39	_____
	7	CHECK	42	_____

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT 80-87-05-0315

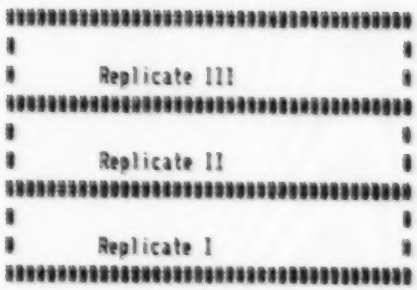
PLOT DATA SHEET

PLOT #: 3 LOCATION: SW 2-50-15 CO-OPERATOR: E. Becker

FORAGE VARIETY: Timothy YEAR SEEDED: 1987 DATE SPRAYED: Sept. 25,1987

SITE DIAGRAM:

South



North

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	MCPA	43	
	2	BUCTRIL	46	
	3	BANVEL	49	
	4	TORCH	52	
	5	BLAGAL	55	
	6	2,4-D	58	
	7	CHECK	61	
2	1	MCPA	44	
	2	TORCH	47	
	3	BUCTRIL	50	
	4	BANVEL	53	
2	5	BLAGAL	56	
	6	2,4-D	59	
	7	CHECK	62	
3	1	MCPA	45	
	2	BUCTRIL	48	
	3	BANVEL	51	
	4	TORCH	54	
	5	BLAGAL	57	
	6	2,4-D	60	
	7	CHECK	63	

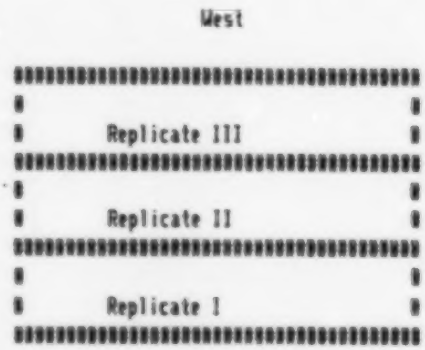
CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

PLOT DATA SHEET

PLOT #: 4 LOCATION: NE 15-48-14 CO-OPERATOR: K. Graham

FORAGE VARIETY: Brome Grass YEAR SEEDED: 1987 DATE SPRAYED: Sept. 25,1987

SITE DIAGRAM:



REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	MCPA	64	_____
	2	BUCTRIL	67	_____
	3	BANVEL	70	_____
	4	TORCH	73	_____
	5	BLAGAL	76	_____
	6	2,4-D	79	_____
	7	CHECK	82	_____
2	1	MCPA	65	_____
	2	TORCH	68	_____
	3	BUCTRIL	71	_____
	4	BANVEL	74	_____
2	5	BLAGAL	77	_____
	6	2,4-D	80	_____
	7	CHECK	83	_____
3	1	MCPA	66	_____
	2	BUCTRIL	69	_____
	3	BANVEL	72	_____
	4	TORCH	75	_____
	5	BLAGAL	78	_____
	6	2,4-D	81	_____
	7	CHECK	84	_____

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

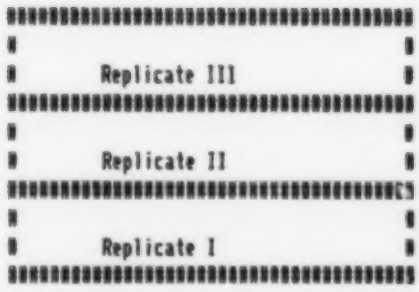
PLOT DATA SHEET

PLOT #: 5 LOCATION: NW 8-51-13 CO-OPERATOR: E. Hornseth

FORAGE VARIETY: Kentucky Blue Grass YEAR SEEDED: 1987 DATE SPRAYED: Sept. 25,1987

SITE DIAGRAM:

East



West

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	MCPA		
	2	BUCTRIL		
	3	BANVEL		
	4	TORCH		
	5	BLAGAL		
	6	2,4-D		
	7	CHECK		
2	1	MCPA		
	2	TORCH		
	3	BUCTRIL		
	4	BANVEL		
2	5	BLAGAL		
	6	2,4-D		
	7	CHECK		
3	1	MCPA		
	2	BUCTRIL		
	3	BANVEL		
	4	TORCH		
	5	BLAGAL		
	6	2,4-D		
	7	CHECK		

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

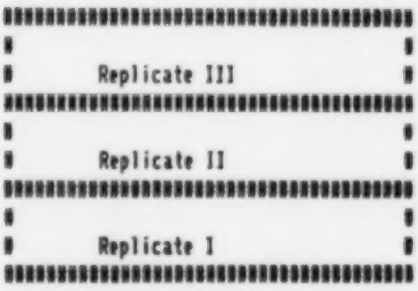
PLOT DATA SHEET

PLOT #: 6 LOCATION: NE 7-51-13 CO-OPERATOR: E. Horaseth

FORAGE VARIETY: Brome Grass YEAR SEEDED: 1986 DATE SPRAYED: Sept. 25,1987

SITE DIAGRAM:

South



North

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	MCPA	106	
	2	BUCTRIL	109	
	3	BANVEL	112	
	4	TORCH	115	
	5	BLAGAL	118	
	6	2,4-D	121	
	7	CHECK	124	
2	1	MCPA	107	
	2	TORCH	110	
	3	BUCTRIL	113	
	4	BANVEL	116	
2	5	BLAGAL	119	
	6	2,4-D	122	
	7	CHECK	125	
3	1	MCPA	108	
	2	BUCTRIL	111	
	3	BANVEL	114	
	4	TORCH	117	
	5	BLAGAL	120	
	6	2,4-D	123	
	7	CHECK	126	

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-85-8315

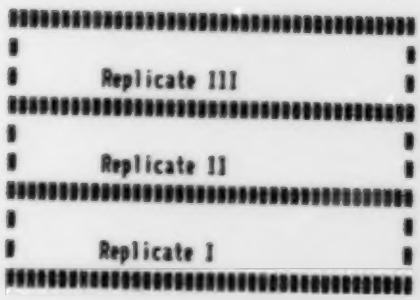
PLOT DATA SHEET

PLOT #: 7 LOCATION: NW 27-50-15 CO-OPERATOR: E. Geall

FORAGE VARIETY: Intermediate Wheat Grass YEAR SEEDED: 1987 DATE SPRAYED: May 13, 1988

SITE DIAGRAM:

North



South

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL	127	
	2	GLEAN	128	
	3	BUCTRIL	129	
	4	CHECK	130	
	5	2,4-D	131	
	6	MCPA	132	
	7	TORCH	133	
	8	BLAZAL	134	
2	1	GLEAN	135	
	2	TORCH	136	
	3	CHECK	137	
	4	2,4-D	138	
2	5	MCPA	139	
	6	BLAZAL	140	
	7	BANVEL	141	
	8	BUCTRIL	142	
3	1	CHECK	143	
	2	BUCTRIL	144	
	3	MCPA	145	
	4	TORCH	146	
	5	BLAZAL	147	
	6	GLEAN	148	
	7	2,4-D	149	
	8	BANVEL	150	

Head Consulting

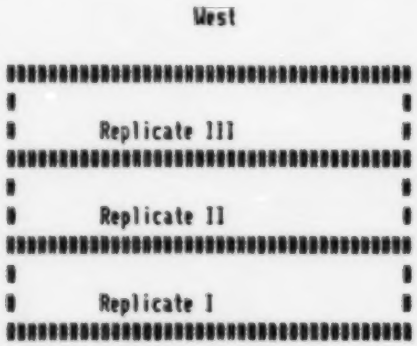
CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

PLOT DATA SHEET

PLOT #: 8 LOCATION: NE 28-51-15 CO-OPERATOR: B. Geall

FORAGE VARIETY: Crested Wheat Grass YEAR SEEDED: 1987 DATE SPRAYED: May 13, 1988

SITE DIAGRAM:



REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL	151	
	2	GLEAN	152	
	3	BUCTRIL	153	
	4	CHECK	154	
	5	2,4-D	155	
	6	MCPA	156	
	7	TORCH	157	
	8	BLAGAL	158	
2	1	GLEAN	159	
	2	TORCH	160	
	3	CHECK	161	
	4	2,4-D	162	
2	5	MCPA	163	
	6	BLAGAL	164	
	7	BANVEL	165	
	8	BUCTRIL	166	
3	1	CHECK	167	
	2	BUCTRIL	168	
	3	MCPA	169	
	4	TORCH	170	
	5	BLAGAL	171	
	6	GLEAN	172	
	7	2,4-D	173	
	8	BANVEL	174	

Head Consulting

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #0-87-05-0315

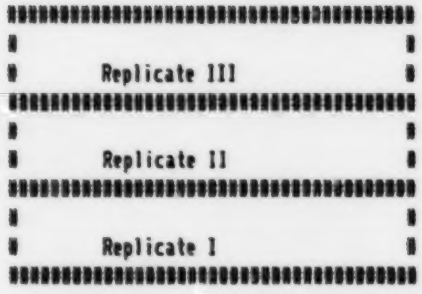
PLOT DATA SHEET

PLOT #: 9 LOCATION: SW 2-50-15 CO-OPERATOR: E. Becker

FORAGE VARIETY: Timothy YEAR SEEDED: 1987 DATE SPRAYED: May 13, 1988

SITE DIAGRAM:

South



North

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL	175	
	2	GLEAN	176	
	3	BUCTRIL	177	
	4	CHECK	178	
	5	2,4-D	179	
	6	MCPA	180	
	7	TORCH	181	
	8	BLAZAL	182	
2	1	GLEAN	183	
	2	TORCH	184	
	3	CHECK	185	
	4	2,4-D	186	
2	5	MCPA	187	
	6	BLAZAL	188	
	7	BANVEL	189	
	8	BUCTRIL	190	
3	1	CHECK	191	
	2	BUCTRIL	192	
	3	MCPA	193	
	4	TORCH	194	
	5	BLAZAL	195	
	6	GLEAN	196	
	7	2,4-D	197	
	8	BANVEL	198	

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

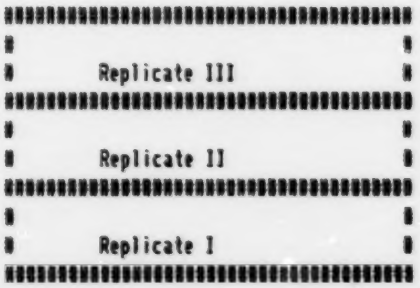
PLOT DATA SHEET

PLOT #: 10 LOCATION: NW 8-51-13 CO-OPERATOR: E. Hornseth

FORAGE VARIETY: Kentucky Blue Grass YEAR SEEDED: 1987 DATE SPRAYED: May 13, 1988

SITE DIAGRAM:

East



West

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL		
	2	GLEAN		
	3	BUCTRIL		
	4	CHECK		
	5	2,4-D		
	6	MCPA		
	7	TORCH		
	8	BLAGAL		
2	1	GLEAN		
	2	TORCH		
	3	CHECK		
	4	2,4-D		
2	5	MCPA		
	6	BLAGAL		
	7	BANVEL		
	8	BUCTRIL		
3	1	CHECK		
	2	BUCTRIL		
	3	MCPA		
	4	TORCH		
	5	BLAGAL		
	6	GLEAN		
	7	2,4-D		
	8	BANVEL		

Head Consulting

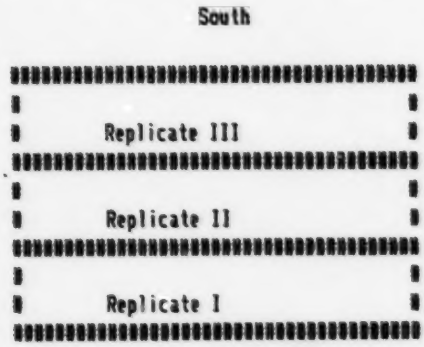
CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #0-87-05-0315

PLOT DATA SHEET

PLOT #: 11 LOCATION: NE 7-51-13 CO-OPERATOR: E. Hornseth

FORAGE VARIETY: Brome Grass YEAR SEEDED: 1986 DATE SPRAYED: May 13, 1988

SITE DIAGRAM:



REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL	223	
	2	GLEAN	224	
	3	BUCTRIL	225	
	4	CHECK	226	
	5	2,4-D	227	
	6	MCPA	228	
	7	TORCH	229	
	8	BLAZAL	230	
2	1	GLEAN	231	
	2	TORCH	232	
	3	CHECK	233	
	4	2,4-D	234	
2	5	MCPA	235	
	6	BLAZAL	236	
	7	BANVEL	237	
	8	BUCTRIL	238	
3	1	CHECK	239	
	2	BUCTRIL	240	
	3	MCPA	241	
	4	TORCH	242	
	5	BLAZAL	243	
	6	GLEAN	244	
	7	2,4-D	245	
	8	BANVEL	246	

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

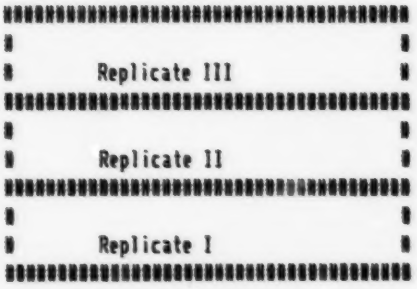
PLOT DATA SHEET

PLOT #: 12 LOCATION: SW 28-51-15 CO-OPERATOR: B. Geall

FORAGE VARIETY: Crested Wheat Grass YEAR SEEDED: 1988 DATE SPRAYED: Oct. 7, 1988

SITE DIAGRAM:

North



South

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL		
	2	GLEAN		
	3	BUCTRIL		
	4	CHECK		
	5	2,4-D		
	6	MCPA		
	7	TORCH		
	8	BLAGAL		
2	1	GLEAN		
	2	TORCH		
	3	CHECK		
	4	2,4-D		
2	5	MCPA		
	6	BLAGAL		
	7	BANVEL		
	8	BUCTRIL		
3	1	CHECK		
	2	BUCTRIL		
	3	MCPA		
	4	TORCH		
	5	BLAGAL		
	6	GLEAN		
	7	2,4-D		
	8	BANVEL		

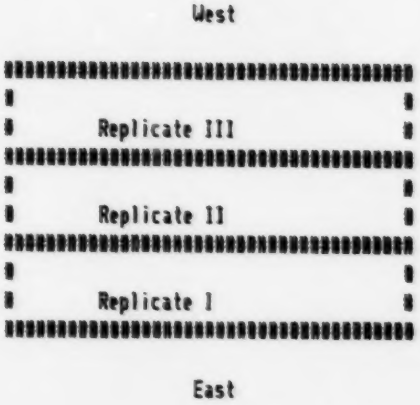
CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #0-87-05-0315

PLOT DATA SHEET

PLOT #: 13 LOCATION: NE 15-48-14 CO-OPERATOR: K. Graham

FORAGE VARIETY: Brome Grass YEAR SEEDED: 1987 DATE SPRAYED: Oct. 7, 1988

SITE DIAGRAM:



REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL		
	2	GLEAN		
	3	BUCTRIL		
	4	CHECK		
	5	2,4-D		
	6	MCPA		
	7	TORCH		
	8	BLAGAL		
2	1	GLEAN		
	2	TORCH		
	3	CHECK		
	4	2,4-D		
2	5	MCPA		
	6	BLAGAL		
	7	BANVEL		
	8	BUCTRIL		
3	1	CHECK		
	2	BUCTRIL		
	3	MCPA		
	4	TORCH		
	5	BLAGAL		
	6	GLEAN		
	7	2,4-D		
	8	BANVEL		

Head Consulting

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #0-87-05-0315

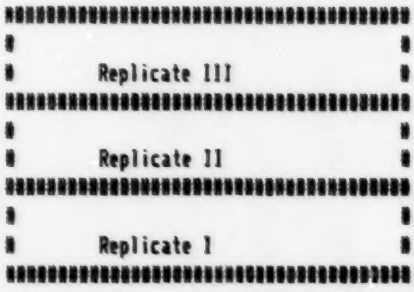
PLOT DATA SHEET

PLOT #: 14 LOCATION: SE 29-58-12 CO-OPERATOR: D. Youzwa

FORAGE VARIETY: Timothy YEAR SEEDED: 1988 DATE SPRAYED: Oct. 7, 1988

SITE DIAGRAM:

North



South

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL		
	2	GLEAN		
	3	BUCTRIL		
	4	CHECK		
	5	2,4-D		
	6	MCPA		
	7	TORCH		
	8	BLAGAL		
2	1	GLEAN		
	2	TORCH		
	3	CHECK		
	4	2,4-D		

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
2	5	MCPA		
	6	BLAGAL		
	7	BANVEL		
	8	BUCTRIL		
3	1	CHECK		
	2	BUCTRIL		
	3	MCPA		
	4	TORCH		
	5	BLAGAL		
	6	GLEAN		
	7	2,4-D		
	8	BANVEL		

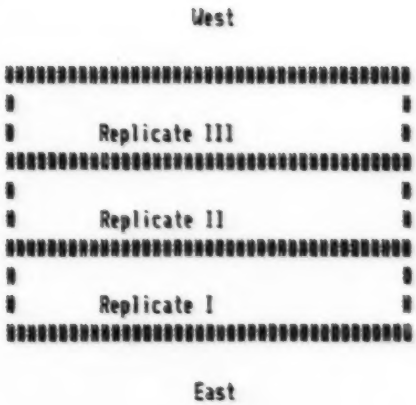
CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT RD-87-05-0315

PLOT DATA SHEET

PLOT #: 15 LOCATION: NE 20-49-13 CO-OPERATOR: R. McGowan

FORAGE VARIETY: Timothy YEAR SEEDED: 1988 DATE SPRAYED: Oct. 7, 1988

SITE DIAGRAM:



REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL		
	2	GLEAN		
	3	BUCTRIL		
	4	CHECK		
	5	2,4-D		
	6	MCPA		
	7	TORCH		
	8	BLAGAL		
2	1	GLEAN		
	2	TORCH		
	3	CHECK		
	4	2,4-D		

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
2	5	MCPA		
	6	BLAGAL		
	7	BANVEL		
	8	BUCTRIL		
3	1	CHECK		
	2	BUCTRIL		
	3	MCPA		
	4	TORCH		
	5	BLAGAL		
	6	GLEAN		
	7	2,4-D		
	8	BANVEL		

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS - ADF PROJECT #D-87-05-0315

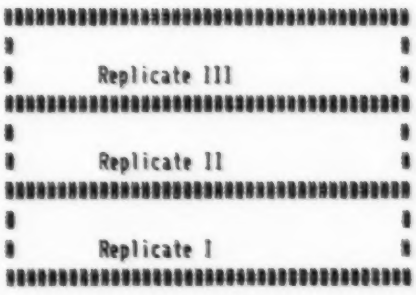
PLOT DATA SHEET

PLOT #: 16 LOCATION: SW 12-51-14 CO-OPERATOR: D. Waldorf

FORAGE VARIETY: Timothy YEAR SEEDED: 1988 DATE SPRAYED: Oct 8, 1988

SITE DIAGRAM:

East



West

REP	SUBPLOT	CHEMICAL	HARVEST SAMPLE #	YIELD
1	1	BANVEL		
	2	GLEAN		
	3	BUCTRIL		
	4	CHECK		
	5	2,4-D		
	6	MCPA		
	7	TORCH		
	8	BLAGAL		
2	1	GLEAN		
	2	TORCH		
	3	CHECK		
	4	2,4-D		
2	5	MCPA		
	6	BLAGAL		
	7	BANVEL		
	8	BUCTRIL		
3	1	CHECK		
	2	BUCTRIL		
	3	MCPA		
	4	TORCH		
	5	BLAGAL		
	6	GLEAN		
	7	2,4-D		
	8	BANVEL		

Financial Statement

1987-88 Budget Approved		$4,676.00
Expenses:		
Flag Stakes	$ 104.33	
Poly Bags	225.00	
Plot Markers, Sign Posts	591.81	
Head Consulting	1,971.92	
Glean Chemical	380.00	
Total Expenses		3,273.06
Balance on 1987-88 Budget		$1,402.94
1988-89 Budget Approved		$9,615.00

Outstanding Account

Head Consulting	$3,881.78

- A portion of this account is for the 1987-88 budget for fall yield sampling (allocate $1,402.94).
- The remainder is for the 1988-89 budget for the fall chemical application on our 1989 plots (allocate $2,478.84).

Government of Saskatchewan

Memorandum

JAN 19 1989

From L. J. Lee, Ag. Rep.
Nipawin

Date Jan. 17, 1989

Phone

Your File

Our File

To Ashley Edge, A.D.F. Consultant
Prince Albert,
and [redacted]

Re Project No. 87-05-0315
Progress Report

You will find, attached, a year-end progress report for the above project. Roy Button, Soils and Crops Specialist, has completed his evaluation of the report which is attached.

You will note that there is an account outstanding to Head Consulting for work done on the project during the year. The accountant in Tisdale is holding this bill until the year-end report is in. Please inform them that the report has been received by your office so that payment can be made.

If you have any questions about the report you can call me at 862-1787.

L. J. Lee
Ag. Rep.

LJL/jc
atts.

Saskatchewan Agriculture

Economics Branch

Agriculture Development Fund

Demonstration Report Evaluation

Send to: Ashley Edge Project Number 87-05-0315

Payment Due $ _____ Progress Report: ✓ Final Report _____

Project Title: Weed Control in Forage Seed Crops

Project Manager: Larry Lee Cooperator: District 31 Agricultural Board

The project evaluator should indicate if the report is ADEQUATE or INADEQUATE.

	Report is inadequate	adequate
1. Technical report		
a) Annual final report		
— objectives		✓
— project design		✓
— procedure or methods used		✓
— economic analysis		✓
— conclusions		✓
— recommendations		✓
— lay language summary (100 words)		
— other _____		
2. Statement of expenditures:		
— total project expenditures to date		✓
— expenditures according to approved budget		✓
3. Project acknowledges source of funds		✓

4. Reviewer's recommendation

Recommend payment can be made on contract Yes ✓ No _____

Remarks on **inadequate** portions of report: (If necessary, additional pages may be attached)

A large number of sites are selected for the trials required. Very cost effective.

Reviewer: Roy Buttars Title: Seed Crops Agrologist

Signature: Roy Buttars Date: Jan 16/88

ADF Authorization _____ Date: _____

Government of Saskatchewan

Memorandum

From L. J. Lee
Nipawin

Date Jan. 10, 1986

Phone

To Roy Button
Soils & Crops Specialist

Your File

Our File

Re ADF Report
Chemical Weed Control in Forage Seed Crops

You will find, attached, an annual report which I have prepared on the above project. Plese read through this report and make any changes or additional comments you feel are needed.

We are continuing the project next year and, if you feel changes should be made in the project, you could phone and discuss these with me.

If you do not see any changes that are required in the report you could return it to me and I will then forward it on to ADF.

L. J. Lee/jc

L. J. Lee
Agricultural Representative

LJL/jc
att.

Final Report

D-87-05-0315

CHEMICAL WEED CONTROL IN FORAGE SEED CROPS

Funded by
The Agriculture Development Fund

Conducted by
Head and Associates, Nipawin

Saskatchewan Agriculture

Agriculture Development Fund

Project Information

[redacted]nal report

AGRICULTURE DEVELOPMENT FUND

Chemical Weed Control in Forage Seed Crops

Project Number D-315

Co-operators: **Ed & Brian Geall, Nipawin**
Earl Becker, Codette
Kelly Graham, Aylsham
Elmer Hornseth, Nipawin
Don Youzwa, Nipawin
Richard McGowan, Aylsham
Don Waldorf, Nipawin

Project Manager: Head and Associates, Nipawin

Department Representative: Larry Lee, Extension Agrologist
Nipawin

3. OBJECTIVE

To demonstrate the effect of various herbicides on seed yields of perennial grasses when applied in the fall of the establishment year or in the spring of the first seed year.

4. PROCEDURE

Plots were located on newly established stands of perennial grasses managed for seed production. Two plots were established at each site. One received herbicide applications in the fall and the second in the following spring.

The project was carried out over two years. In year 1 plots were sprayed in the fall of 1987 and in the spring of 1988. In Year 2 a second set of plots were established and sprayed in the fall of 1988 and the spring of 1989.

Plot locations, crops and co-operators are summarized in Table 1.

The plots were in the form of randomized complete blocks replicated 3 times (Figure 1.).

Herbicides applied in the fall of 1987 included Banvel, Buctril-M, Blagal, MCPA, Torch, and 2,4-D Amine. In the spring of 1988 the plots were expanded to include Glean.

Herbicides included in the project and the rates of application are summarized in Table 2.

Table 2. Herbicides and application rates

Herbicide	Rate (L/Ha)
Banvel (480 g/l)	0.290
Blagal (375 g/l)	2.250
Buctril-M (560 g/l)	1.000
MCPA (500 g/l)	2.200
2,4-D (500 g/l)	2.200
Torch (450 g/l)	0.875
Glean	22 g/ha

Table 1. Plot locations and co-operators

Plot	Co-operator	Crop	Date Sprayed	Location
1	E. Geall	Intermediate Wheat Grass	Sept 26, 1987	NW 27-50-15-W2
2	B. Geall	Crested Wheat Grass	Oct 18, 1987	NE 28-51-15-W2
3	E. Becker	Timothy	Sept 25, 1987	SW 2-50-15-W2
4	K. Graham	Bromegrass	Sept 25, 1987	NE 15-48-14-W2
5	E. Hornseth	Kentucky Bluegrass	Sept 25, 1987	NW 8-51-13-W2
6	E. Hornseth	Bromegrass	Sept 25, 1987	NE 7-51-13-W2
7	E. Geall	Intermediate Wheat Grass	May 13, 1988	NW 27-50-15-W2
8	B. Geall	Crested Wheat Grass	May 13, 1988	NE 28-51-15-W2
9	E. Becker	Timothy	May 13, 1988	SW 2-50-15-W2
10	E. Hornseth	Kentucky Bluegrass	May 13, 1988	NW 8-51-13-W2
11	E. Hornseth	Bromegrass	May 13, 1988	NE 7-51-13-W2
12	B. Geall	Crested Wheat Grass	Oct 7, 1988	SW 28-51-15-W2
13	K. Graham	Bromegrass	Oct 7, 1988	NE 15-48-14-W2
14	D. Youzwa	Timothy	Oct 7, 1988	SE 29-50-12-W2
15	R. McGowan	Timothy	Oct 7, 1988	NE 20-49-13-W2
16	D. Waldorf	Bromegrass	Oct 8, 1988	SW 12-51-14-W2
17	B. Geall	Crested Wheat Grass	May 5, 1989	SW 28-51-15-W2
18	K. Graham	Bromegrass	May 5, 1989	NE 15-48-14-W2
19	D. Youzwa	Timothy	May 5, 1989	SE 29-50-12-W2
20	R. McGowan	Timothy	May 5, 1989	NE 20-49-13-W2
21	D. Waldorf	Bromegrass	May 6, 1989	SW 12-51-14-W2

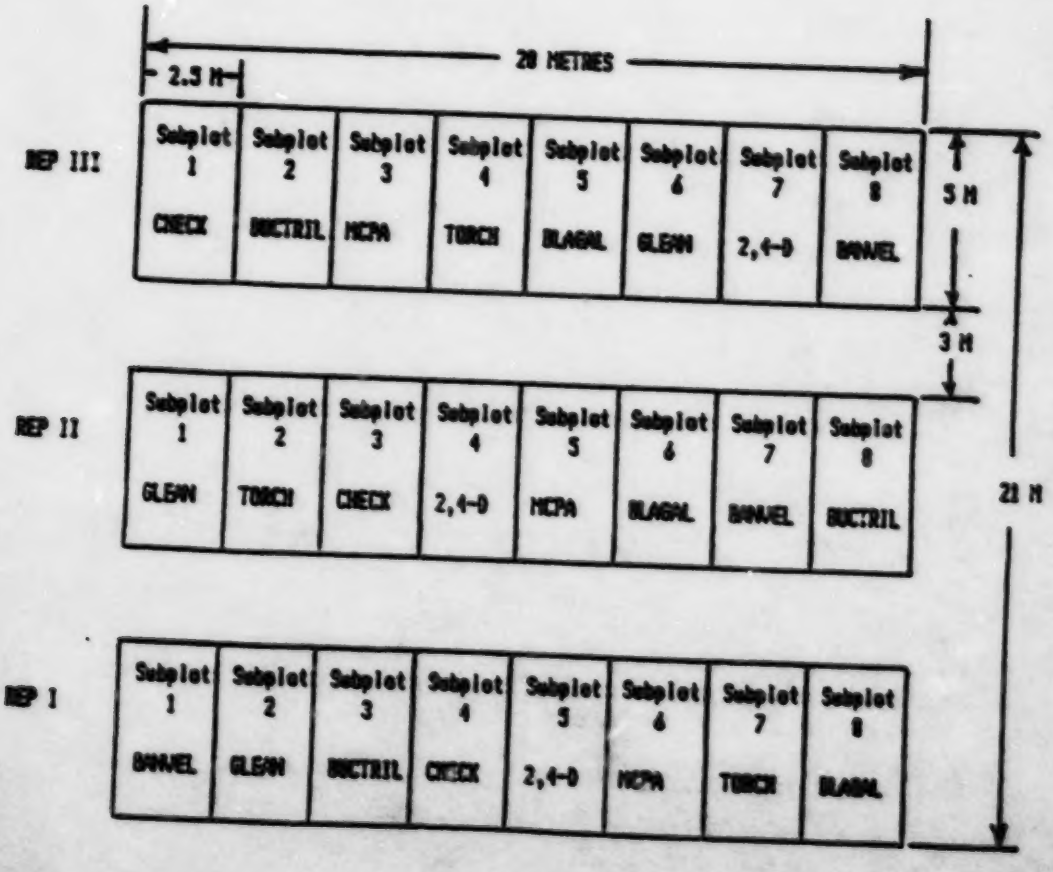
The herbicides were applied with a hand propelled plot sprayer. The sprayer was equipped with a 2 metre shielded boom with 4 Delavan LF-80 nozzles on 50 cm spacings. The system was pressurized with compressed CO_2 to provide a spray volume of 350 ml/min/nozzle. The sprayer was propelled at a speed of about 1 metre/second to give an application rate equivalent to 110L/hectare.

Weeds present in the plot areas prior to spraying and at harvest were recorded (Appendix).

A one square metre yield sample was collected from each subplot at harvest. The samples were bagged, dried, and delivered to the Canada Agriculture Research Station at Melfort for threshing and weighing. The statistical analyses of the yield data were also provided by the Melfort Research Station.

The seed yield data and statistical analyses as provided by the Melfort Research Station are not included in this report. These data are under separate cover.

Figure 1. Field plot design



5. RESULTS

Drought conditions were severe in the early part of the 1988 growing season. The Nipawin weather station recorded only 39% of normal precipitation for the 4 months of April through June. These conditions would likely have had a far greater influence on seed yields of the grasses than any of the herbicide treatments.

The Kentucky bluegrass in Plots 5 and 10 was so severely affected by the drought that no yield samples were collected. Much of the timothy in Plots 3 and 9 did not even put up seed stocks due to the drought.

The bromegrass in Plot 4 was a very thin stand with high populations of weeds, particularly dandelions. The fall of 1987 herbicide treatments reduced weed competition sufficiently to cause a visual difference in the growth of the brome in 1988. This increased growth, however, did not translate into significant increases in seed yields.

In general, the weed control achieved in the plots was significantly poorer than that obtained by the co-operators on the rest of the field. In most cases the co-operator routinely applies both a fall and a spring application of herbicides in the year of establishment. This practice appears to be considerably more effective in controlling persistent weeds such as narrow leafed hawks-beard.

1988 PLOTS

<u>Plot 1 & 7: Geall - Intermediate Wheat Grass</u>

Differences in stand densities were observed in these plots. Replicate 1 had a significantly higher population of intermediate wheat grass than Replicates 2 and 3. All herbicide treatments had fewer weeds than the Checks, however no treatment was visibly superior. Although weeds were observed in each subplot, their populations were insignificant except for the wild oats that germinated in mid-season in Replicates 2 and 3.

The herbicide treatments had no significant effects on seed yields in either the spring or fall applications.

Plot 2 & 8: Geall - Crested Wheat Grass

The Crested Wheat Grass was severely affected by the drought. There were virtually no weeds, except for the occasional hawks-beard observed at harvest.

Subplots receiving fall applied MCPA and spring applied Banvel yielded significantly less seed than the Checks.

Plot 3 & 9: Becker - Timothy

The effects of the early season drought were very obvious in these plots. Many of the timothy plants did not put up seed stalks. There were very few weeds in any of the subplots at harvest. Hawks-beard occurred in the checks only.

Seed yields from the subplots receiving herbicide treatments were not significantly different than the Checks.

Plot 4: Graham - Bromegrass

This plot had severe weed infestations. Dandelion was the major weed species. No herbicide eliminated all the weeds nor reduced the weed populations to acceptable levels. However, growth of the bromegrass was visibly enhanced by the reduced weed competition in the herbicide treatments.

All herbicide treatments except MCPA provided higher seed yields than the Check.

Plot 5 & 10: Hornseth - Kentucky Blue Grass

The Kentucky bluegrass was so severely affected by the drought that these plots were abandoned.

Plot 6 & 11: Hornseth - Bromegrass (second year stand)

There were virtually no weeds in these plots. The drought conditions along with the competition of the well established second year bromegrass eliminated the weeds even in the untreated Checks. There were no visual crop differences among the herbicide treatments.

Seed yields from the subplots receiving herbicide treatments were not significantly different than the Checks.

1989 PLOTS

Plots 12 & 17: Geall - Crested Wheat Grass

The Crested Wheat Grass in these plots showed no visible effects to the herbicide treatments. No individual herbicide provided superior weed control across all replicates, however the Checks had noticeably higher weed populations than any of the herbicide subplots. This was particularly noticeable in Replicate 3. American dragonhead and narrow leafed hawks-beard were the most prevalent weeds. Weed control in general was not as effective as that obtained by the co-operator on the balance of the field.

The spring plot (Plot 17) had higher weed populations than Plot 12 on which the herbicides were applied in the fall of 1988.

The subplots receiving Banvel applications either in the fall or the spring yielded significantly less seed than the Checks.

Plots 13 & 18: Graham - Bromegrass

The bromegrass on this site was a very thin stand with high weed populations. All herbicide treatments significantly reduced weed populations but none lowered the populations to acceptable levels. The major weeds were dandelion and Canada Thistle. The visible growth responses to the herbicide applications that was noted on this site in 1988 (Plot 4) were not obtained in 1989.

Plots 14 & 19: Youzwa - Timothy

The timothy in this plot suffered significant winterkill during the 1988 - 89 winter, particularly in Replicate 3. The area in which the fall plot (Plot 14) was located suffered the most winter damage.

None of the herbicide treatments gave acceptable weed control, although the herbicide treatments were somewhat better than the unsprayed Checks. The Checks generally had more lamb's-quarters,

shepherd's purse and wild mustard than any of the herbicide treatments. Hawks-beard was the most prevalent weed.

The subplots receiving herbicide applications either in the fall or spring did not yield significantly more seed than the Checks.

Plots 15 & 20: McGowan - Timothy

Overall weed control in these plots was much poorer than the remainder of the field. Fall application of herbicides (Plot 15) resulted in lower weed populations than the spring applications (Plot 20). Spring applications resulted in higher populations of lady's-thumb, lambsquarters, and hawksbeard.

Glean applied in the spring caused a visible reduction in the growth of timothy in all replicates in Plot 20. Seed yields were also significantly lower for the Glean treatment than the Check in Plot 20. The fall applied Glean had no significant effects on growth or seed yields.

Banvel applied in the fall (Plot 15) gave significantly lower seed yields than the Check. The spring applied Banvel did not reduce seed yields.

Spring applied 2,4-D and MCPA significantly reduced seed yields relative to the Check.

Plot 16 & 21: Waldorf - Bromegrass

There was no visible difference in the herbicide efficiency between the spring and fall applications. Neither application gave adequate weed control for a seed field.

Seed yields from the herbicide treated plots were not significantly different than from the Checks.

6. CONCLUSIONS

Timothy

Glean - Spring applied Glean significantly reduced vegetative growth and seed yields on one site. (Non-registered use)

7. Impact:

One of the main promotions of the project occurred through Newfield Seeds' field day. A total of three busloads of farmers from across northeast Saskatchewan took part in the tour. We made a stop at the Don Waldorf site and described treatments included with the project. Copies of last year's interim report were provided to tour participants.

Highlights of the project will be presented to Newfield Seeds Growers Information Meeting on February 21, 1990.

We plan on discussing the project with Dr. N. Malik, Canada Agriculture Research Station, Melfort. We will see if he is interested in preparing a research paper.

We plan on expanding the project for future years. We would like to evaluate treatments of chemicals in fall and spring on the same area to improve weed control. Project seed yields were also much higher than the farmers harvested yields which may indicate shattering and combining losses. We would like to evaluate time of swathing in future years to increased harvested seed yields.

8. Financial Statement:

1987-88 Budget Forwarded	$ 1,402.94
1988-89 Budget Approved	9,615.00
Total Available	$11,017.94
Less Bill from 1988-89	6,808.00
Balance forwarded to 1989-90	$ 7,136.16
Budget Approved for 1989-90	6,808.00
Total Available for 1989-90	$13,944.16
Less Expenses for 1989-90	8,655.20
Balance in Project	$ 5,288.96